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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

EPA-R08-OAR-2011-0770, FRL-9734-8]

Approval and Promulgation of Implementation Plans; State of Colorado; Regional Haze State Implementation Plan

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: EPA is approving a State Implementation Plan (SIP) revision submitted by the State of Colorado on May 25, 2011 that addresses regional haze. Colorado submitted this SIP revision to meet the requirements of the Clean Air Act (CAA or “the Act”) and our rules that require states to prevent any future and remedy any existing man-made impairment of visibility in mandatory Class I areas caused by emissions of air pollutants from numerous sources located over a wide geographic area (also referred to as the “regional haze program”). EPA is taking this action pursuant to section 110 of the CAA.

DATES: This final rule is effective **[insert date 30 days from the date of publication in the Federal Register]**

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–R08–OAR–2011–0770. All documents in the docket are listed on the www.regulations.gov Web site. Publicly available docket materials are available either electronically through www.regulations.gov, or in hard copy at the Air Program, Environmental Protection Agency (EPA), Region 8, 1595 Wynkoop Street, Denver, Colorado 80202–1129. EPA requests that if, at all possible, you contact the individual listed in the **FOR FURTHER INFORMATION**

CONTACT section to view the hard copy of the docket. You may view the hard copy of the docket Monday through Friday, 8 a.m. to 4 p.m., excluding Federal holidays.

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Definitions

For the purpose of this document, we are giving meaning to certain words or initials as follows:

- i. The words or initials Act or CAA mean or refer to the Clean Air Act, unless the context indicates otherwise.
- ii. The initials APEN mean or refer to Air Pollution Emissions Notice.
- iii. The initials AQCC mean or refer to the Air Quality Control Commission.
- iv. The initials BACT mean or refer to Best Available Control Technology.
- v. The initials BART mean or refer to Best Available Retrofit Technology.
- vi. The initials CMA mean or refer to the Colorado Mining Association.
- vii. The words Colorado and the State mean the State of Colorado.
- viii. The initials EGUs mean or refer to Electric Generating Units.
- ix. The words EPA, we, us, our, or the Agency mean or refer to the United States Environmental Protection Agency.
- x. The initials LNB mean or refer to low NO_x burner.
- xi. The initials NAAQS mean or refer to the National Ambient Air Quality Standards.
- xii. The initials NO_x mean or refer to nitrogen oxides.

- xiii. The initials NPS mean or refer to National Park Service.
- xiv. The initials PM_{2.5} mean or refer to particulate matter with an aerodynamic diameter of less than 2.5 micrometers.
- xv. The initials SCR mean or refer to selective catalytic reduction.
- xvi. The initials SIP mean or refer to State Implementation Plan.
- xvii. The initials SNCR mean or refer to selective non-catalytic reduction.
- xviii. The initials SO₂ mean or refer to sulfur dioxide.
- xix. The initials TSD mean or refer to Technical Support Document.

I. Background

The CAA requires each state to develop plans, referred to as SIPs, to meet various air quality requirements. A state must submit its SIPs and SIP revisions to us for approval. Once approved, a SIP is enforceable by EPA and citizens under the CAA, also known as being federally enforceable. This action addresses the requirement that states have SIPs that address regional haze.

A. Regional Haze

In 1990, Congress added section 169B to the CAA to address regional haze issues, and we promulgated regulations addressing regional haze in 1999 (64 FR 35714, July 1, 1999, codified at 40 CFR part 51, subpart P). The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in our visibility protection regulations at 40 CFR 51.300-309. The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia and the Virgin Islands. States were required to submit a SIP addressing regional haze visibility impairment no later than December 17, 2007 (40 CFR 51.308(b)).

Few states submitted a regional haze SIP prior to the December 17, 2007, deadline, and on January 15, 2009, EPA found that 37 states, including Colorado, the District of Columbia, and the Virgin Islands, had failed to submit SIPs addressing the regional haze requirements (74 FR 2392). Once EPA has found that a state has failed to make a required submission, EPA is required to promulgate a Federal Implementation Plan (FIP) within 2 years unless the state submits a SIP and the Agency approves it within the 2-year period. CAA section 110(c)(1).

Colorado submitted a SIP addressing regional haze on May 25, 2011.

B. Lawsuits

In a lawsuit in the U.S. District Court for the District of Colorado, environmental groups sued us for our failure to take timely action with respect to the regional haze requirements of the CAA and our regulations. In particular, the lawsuits alleged that we had failed to promulgate FIPs for these requirements within the 2-year period allowed by CAA section 110(c) or, in the alternative, fully approve SIPs addressing these requirements.

As a result of these lawsuits, we entered into a consent decree. The consent decree requires that we sign a notice of final rulemaking addressing the regional haze requirements for Colorado by September 10, 2012. We are meeting that requirement with the signing of this notice of final rulemaking.

C. Our Proposal

We signed our notice of proposed rulemaking on March 15, 2012, and it was published in the *Federal Register* on March 26, 2012 (77 FR 18052). In that notice, we provided a detailed description of the various regional haze requirements. We are not repeating that description

here; instead, the reader should refer to our notice of proposed rulemaking for further detail.¹ In our proposal, we proposed to approve Colorado's May 25, 2011, regional haze SIP.

D. Public Participation

We requested comments on all aspects of our proposed action and provided a 60-day comment period, with the comment period closing on May 25, 2012. We received comments on our proposed rule that generally supported our proposed action and comments that were critical of certain aspects of our proposed action. In this action, we are responding to the comments we have received, taking final rulemaking action, and explaining the bases for our action.

II. Final Action

With this action, EPA is approving a SIP revision submitted by the State of Colorado on May 25, 2011, that addresses regional haze. We are approving the State's regional haze SIP, including revisions submitted as part of the regional haze SIP to:

- Regulation No. 3, Part F, Section VI and Section VII.
- Regulation No. 3, Part D, Section XIV.F.
- Regulation No. 7, Section XVII.E.3.a.

III. Basis for Our Final Action

We have fully considered all significant comments on our proposal and have concluded that no changes from our proposal are warranted. Our action is based on an evaluation of Colorado's regional haze SIP submittal against the regional haze requirements at 40 CFR 51.300–51.309 and CAA sections 169A and 169B. All general SIP requirements contained in

¹ We note that our proposed rule contained certain errors, as follows: 1) In Table 2, at 77 FR 18060, "Tri-State Generation and Transmission, Inc." should have read "Tri-State Generation and Transmission Association, Inc.;" 2) In Table 13, at 77 FR 18068, the visibility improvement for SCR for Craig Unit 2 should have read 0.98 deciviews instead of 1.01 deciviews; and 3) In Table 38, at 77 FR 18085, the annualized costs for the limestone injection improvements (LII) option should have read \$2,188,595 instead of \$914,290. None of these errors impact our analysis or decision. In particular, the cost effectiveness value for the LII option in Table 38 already accounted for the correct annualized cost value.

CAA section 110, other provisions of the CAA, and our regulations applicable to this action were also evaluated. The purpose of this action is to ensure compliance with these requirements. Our authority for action on Colorado's SIP submittal is based on CAA section 110(k).

We are approving the State's regional haze SIP provisions because they meet the relevant regional haze requirements. Most of the adverse comments we received concerning our proposed approval of the regional haze SIP pertained to the State's best available retrofit technology (BART) and reasonable progress determinations. With respect to the BART determinations, we understand that there is room for disagreement about certain aspects of the State's analyses. Furthermore, we may have reached different conclusions had we been performing the determinations in the first instance. However, the comments have not convinced us that the State, conducting specific case-by-case analyses for the relevant units, acted unreasonably or that we should disapprove the State's BART determinations.

With respect to the State's reasonable progress determinations, the State included emission limits in the SIP that reflect reasonable levels of control for reasonable progress for this initial planning period. Here again, we understand that there is room for disagreement about the State's analyses and appropriate limits. And, again, we may have reached different conclusions had we been performing the determinations. However, the comments have not convinced us that the State, conducting specific case-by-case analyses for the relevant units, made unreasonable determinations for this initial planning period or that we should disapprove the State's SIP.

IV. Issues Raised by Commenters and EPA's Response

A. NO_x BART for Tri-State Craig Unit 1 and Unit 2

Comment: We received comments that the State and EPA did not follow the BART guidelines or otherwise meet the intent of the BART requirements because the State and we did not evaluate

the most stringent control efficiencies associated with operating selective catalytic reduction (SCR). The commenters pointed out that State and EPA evaluations assumed that SCR is capable of achieving 0.07 lb/MMBtu on an annual average and 0.07 – 0.08 lb/MMBtu on a 30-day rolling average. Commenters stated that this level reflects 74-75% reduction from baseline emissions from these units, and SCR is well known to be capable of control efficiencies greater than 90% and limits of 0.05 lb/MMBtu or less on a 30-day rolling average. One commenter pointed out that in a November 2010 report, Tri-State’s own consultants evaluated a 0.05 lb/MMBtu design emission rate for SCR. One commenter also pointed out that previous statements by EPA and the National Park Service (NPS) to the State about the Colorado regional haze plan reflect this.^{2, 3}

One commenter went on to say that if an emission rate of 0.05 lb/MMBtu had been used to assess the cost of SCR, the State would have found the cost to be \$5,879 per ton of NO_x reduced for Unit 1 and \$5,728 per ton of NO_x reduced for Unit 2. Commenters provided numerous examples of electric generating units (EGUs) that are achieving or will be required to achieve a NO_x emission rate of 0.05 lb/MMBtu or less on an annual and 30-day rolling average.

Response: We agree that SCR in some cases can achieve annual NO_x emission rates as low as 0.05 lb/MMBtu. However, the annual emission rate assumed by Colorado, 0.07 lb/MMBtu, is within the range of actual emission rates demonstrated at similar facilities in EPA’s Clean Air Markets Division (CAMD) emission database.

Comment: The proposed emission limit of 0.27 lb/MMBtu for selective non-catalytic reduction (SNCR) does not reflect what is achievable for that control technology. The State’s technical

² Letter from Callie A. Videtich, Director, Air Program, EPA Region 8, to Paul Tourangeau, Air Director, Colorado Department of Public Health and the Environment, October 26, 2010, Re: Regional Haze State Implementation Plan. (October 26, 2010 letter).

³ NPS Comments on Best Available Retrofit Technology (BART) Analysis of Control Options For Tri-State Generation & Transmission Association, Inc. – Craig Station Units 1 & 2, December 1, 2010.

support document (TSD) shows that Craig Unit 1 is already meeting an emission rate of 0.27 lb/MMBtu, even without SNCR. Furthermore, as noted by EPA in its October 26, 2010, letter, SNCR is capable of achieving emission reductions of 20-30% below baseline. This would mean that SNCR would actually be capable of achieving an emission rate of around 0.20 lb/MMBtu or lower at Units 1 and 2, not 0.27 lb/MMBtu.

Response: We disagree that the State's TSD shows that Craig 1 is already achieving a 30-day rolling average emission rate of 0.27 lb/MMBtu, even without SNCR. The commenter has confused actual average annual emission rates that Colorado used for cost calculations with 30-day rolling average emission rates. Colorado's TSD shows that the maximum actual 30-day rolling average emission rate during this period was 0.304 lb/MMBtu. Therefore, Craig 1 is currently operating above, not below, the BART emission limit. However, we understand that the commenter's larger point is that the emission limit for Craig Unit 1 does not reflect the level of control that can be achieved with SNCR.

As noted by the commenter, SNCR can typically achieve a 20-30% reduction after combustion controls. By contrast, Colorado assumed that at Craig SNCR could achieve a 15% reduction after combustion controls. This in turn was based on Tri-State's assertion that the Craig BART units can only meet this level of control since the effectiveness of SNCR is lower for wall-fired boilers similar to those at Craig. Under the circumstances, we do not find that the State's conclusion was unreasonable.

Comment: EPA provided no insight as to what it considers presumptive BART to be for Craig Units 1 and 2. Presumptive BART for the Craig units should be based on the primary type of coal burned there, which is sub-bituminous. EPA should establish the presumptive BART limit

for Craig at 0.23 lb/MMBtu. On this basis, the limits proposed by EPA exceed presumptive BART.

Response: The presumptive limits for EGUs, which are reflective of combustion controls for all but cyclone boilers, are clearly stated in the BART guidelines. The presumptive limit for dry-bottom wall-fired EGUs firing sub-bituminous coal, such as the Craig BART units, is 0.23 lb/MMBtu (70 FR 39172, July 6, 2005).

Colorado has stated that the Craig BART units fire sub-bituminous coal that is “bituminous-like” with respect to NO_x formation.⁴ That is, they exhibit relatively higher NO_x emissions. This is supported by actual emissions data, which show that the units fail to achieve the presumptive limit with the existing ultra low-NO_x burners and overfire air, the same combustion controls that EPA assumed for sources when it established the presumptive limit. The State’s analysis of CEMs data in EPA’s CAMD emissions database shows an actual maximum 30-day rolling average emission rate of 0.304 lb/MMBtu at each unit (2006-2008). Thus, we conclude that the presumptive limit that applies to Craig – 0.23 lb/MMBtu – does not provide a meaningful benchmark for evaluating the State selected limits at Craig. Furthermore, our BART guidelines are clear that the BART analysis may result in a limit that differs from the presumptive limit.

Comment: One of the options suggested by the BART Guidelines to evaluate cost effectiveness is cost/deciview. Applying the cost/deciview metric to SCR at Craig yields about \$10 million/deciview for Mt. Zirkel and \$2.6 million/deciview on a cumulative basis. Both values are reasonable when compared to the national average of \$14 - \$18 million/deciview.

Response: The BART Guidelines require that cost effectiveness be calculated in terms of annualized dollars per ton of pollutant removed, or \$/ton (70 FR 39167). The commenters are

⁴ The presumptive limit for dry-bottom wall-fired EGUs firing bituminous coal is 0.39 lb/MMBtu (70 FR 39172).

correct in that the BART Guidelines list the \$/deciview ratio as an additional cost effectiveness metric that can be employed along with \$/ton for use in a BART evaluation. However, the State was not required to use this metric. We do not generally recommend the use of this metric as it can be complicated to use and the results can be difficult to assess. We also note that the \$/deciview metric has not been widely used as a comparative tool. It is sufficient to analyze the cost effectiveness of potential BART controls using \$/ton, in conjunction with an assessment of the modeled visibility benefits of the BART control.

Comment: Because the control efficiency for SCR was underestimated, the visibility benefits from SCR are underestimated by the modeling.

Response: We disagree with this comment. As stated above, while we recognize that lower annual emission rates for SCR have been demonstrated at some facilities, the annual emission rate of 0.07 lb/MMBtu assumed by Colorado in estimating the costs and benefits of SCR is within the overall range for similar facilities in EPA's CAMD emission database. Given this, we find that it was not unreasonable for Colorado to use 0.07 lb/MMBtu to model the predicted visibility improvement from SCR.

Other Comments: A number of commenters objected to our proposed approval of the State's BART determination for Craig Unit 1 on other grounds and asserted that the State should have selected SCR as BART. These commenters articulated several bases for their comments. The comments fall into four main categories, as follows:

1) Costs:

We received numerous comments that the State, relying on Tri-State's cost analysis, significantly overestimated capital costs for SCR at Craig Unit 1 and Unit 2, and that EPA did not conduct a detailed review of Tri-State's cost analysis. Commenters cited numerous sources

to show that the expected capital costs for SCR at Unit 1 and Unit 2 should be lower than what Tri-State assumed in its cost estimates. Commenters noted limited or missing information, such as lack of vendor quotes or detailed cost estimates. According to a commenter, this type of information is necessary for the public or other agencies to be able to thoroughly review and comment on the proposed determinations. According to commenters, the absence of this underlying information renders EPA's proposed approval of the BART determinations for these sources arbitrary. Commenters said that, to the extent that the State or EPA relied on such information, failure to include it in the docket further illegally impaired and deprived the public of its notice and comment rights, by concealing important grounds for the proposed action and preventing the public from examining and offering meaningful comment thereon.

Commenters noted several items in Tri-State's and the State's cost analyses that are not allowed by or are inconsistent with EPA's Control Cost Manual (CCM). According to commenters, Tri-State and the State: 1) disregarded EPA's cost method, often referred to as the "overnight cost method;"⁵ 2) included Allowance for Funds During Construction (AFUDC);⁶ 3) used escalation, which is inappropriate and generally not allowed; 4) included lost generation costs with no support or justification for the costs, the duration of outages needed, and why time beyond normal scheduled outages would be necessary; 5) provided no justification for the inclusion of owner's costs as 10% of the direct cost; 6) included a 50-hour workweek in their cost estimate without any justification; 6) included no consideration of the cost savings when

⁵ The overnight cost method represents the cost of building the plant as if all the supplies could be purchased and all the labor paid within a very short period of time. In contrast, when forecasting revenue requirements for environmental retrofits, utilities typically attempt to estimate the costs that would actually be reflected in their future rate cases as a result of the retrofits in what is known as the "all in" method. According to commenters, the results from these two cost calculating methods cannot and should not be compared. Commenters also asserted the following: 1) Relative to the EPA CCM, the utility method typically overstates the cost of control per ton of avoided emissions by about 36%; and 2) National consistency in cost allocation method is necessary to ensure that no company or state receives an economic advantage by using a different cost method.

⁶ According to commenters, this cost is not allowed because Tri-State is not a rate-regulated utility and the AFUDC cost is not already included in the base case, as per a utility commission decision.

controls like SCR are applied to multiple units at the same facility; and 7) used an unrealistic equipment life and interest rate.

Commenters provided revised cost analyses for SCR at Craig Units 1 and 2. One commenter calculated that a more accurate cost effectiveness value would be no higher than \$3,460/ton and \$3,370/ton at Unit 1 and Unit 2, respectively. Another commenter calculated that average costs would be \$2,209/ton for Unit 1 and \$1,962/ton for Unit 2. Commenters pointed out that these costs were below the threshold established by the State for choosing SCR.

2) Visibility Improvement

Commenters point out that EPA only provides the impacts to the most impacted Class I area, Mt. Zirkel, and that the cumulative impact of a source's emissions on visibility, as well as the cumulative benefit of emission reductions, is a necessary consideration as part of the fifth step in the BART analysis. Commenters provided examples where other EPA regions (Region 6 and Region 9) have considered cumulative visibility benefits. The NPS performed modeling and submitted the results as part of its comments. NPS modeling shows that the cumulative visibility impact from Craig Units 1 and 2 is 17.61 deciviews, while SCR at both units would provide a cumulative visibility improvement of 8.99 deciviews. The modeling also shows that SCR at both units would achieve at least a 0.5 deciview improvement at each of five Class I areas.

3) Determination of BART

Commenters identified numerous issues with the State's determination of BART and consideration of the five factors. First, commenters pointed out that the State relied on a predetermined set of thresholds applicable only to post-combustion NO_x controls for determining what is BART,⁷ and that the State attempted to justify this by a short discussion of its belief that

⁷ For the highest-performing NO_x post-combustion control options (i.e., SCR systems for EGUs) that do not exceed \$5,000/ton of pollutant reduced by the State's calculation, and which provide a modeled visibility benefit of 0.5

“the costs of control should have a relationship to visibility improvement.” According to commenters, the State articulated no governing principle or rational explanation for how it considered the five factors within the context of this threshold.

Commenters asserted that EPA, in its October 26, 2010, comment letter to Colorado, anticipated some of the reasons the State’s threshold is untenable. One commenter went on to say that in the unlikely scenario that the appropriate cost of SCR at Craig Units 1 and 2 is in fact above \$5,000/ton, the State’s criteria “preclude a reasonable weighing of the five factors,” as EPA had foretold. Commenters indicated that EPA relied on the State’s vague and unsubstantiated criteria without resolving or even discussing its prior concerns.

Commenters noted that the Craig analysis presented data for each of the five BART factors, but pointed out that when it came to the crux of the BART determination, the actual weighing of the factors, EPA’s proposed rulemaking failed to explain how EPA determined that costs were unjustified in light of anticipated visibility benefits and the other considerations. As such, commenters said that EPA had failed to require a reasoned basis for weighing the five factors in the Craig BART analysis and determination. One commenter went on to say that to comply with the Administrative Procedure Act, the Agency must provide a reasoned basis for its BART determination, including a reasonable explanation why certain benefits do not justify certain costs, why EPA’s chosen methods for evaluating costs and benefits are appropriate, and what significance the Agency has accorded to each of the five BART factors. The commenter argued that EPA’s failure to identify its method of decision making amounts to an arbitrary decision.

deciview or greater at the primary Class I Area affected, the State views that level of control as generally reasonable. For lesser-performing NO_x post-combustion control options (e.g., SNCR technologies for EGUs) that do not exceed \$5,000/ton of pollutant reduced by the State’s calculation, and which provide a modeled visibility benefit of 0.2 deciview or greater at the primary Class I Area affected, the State views that level of control as generally reasonable.

One commenter stated that it was concerned that, although the State found SCR to be reasonable as BART for Craig Unit 2, it found the control technology to be unreasonable for Unit 1, even though according to the five factors, it would meet the same reasonability threshold as for Unit 2. Notably, the State found the cost of SCR for Unit 2, \$5,728 per ton of NO_x reduced, to be reasonable as it was ultimately adopted as BART.

4) BART Alternative

Commenters pointed out that the Craig BART alternative fails to provide for greater reasonable progress than would be achieved if an adequate source-specific BART limit were required of both subject-to-BART Craig units. Commenters went on to say that BART should have been SCR on both Craig units and thus, the BART alternative of SNCR on Unit 1 and SCR on Unit 2 is not better than BART. According to commenters, given that 40 CFR 51.308(e)(2)(C) requires states to make a BART determination for any source subject to an alternative to BART, the State's flawed BART analysis fails to support an alternative to BART pursuant to EPA regulations.

Response: While we agree with some aspects of the commenters' assertions in these four categories, we disagree with others and ultimately conclude that Colorado's plan achieves a reasonable result overall. We acknowledged in our October 26, 2010, comment letter to the State that the cost analysis was not conducted by Colorado in accordance with EPA's Control Cost Manual, and we agreed that the costs for SCR at Craig Units 1 and 2 appeared to be substantially overestimated, which the commenters also pointed out. In addition, as we suggested during the State's public comment period, the State should have more thoroughly considered the visibility impacts of controlling emissions from Craig 1 on the various impacted Class I areas and not just have focused on the most impacted Class I area.

EPA acknowledges that Colorado's approach appears to be a novel and comprehensive strategy for addressing regional haze requirements and other air quality goals. In 2010, the Colorado General Assembly adopted legislation authorizing the Air Quality Control Commission and the Public Utilities Commission to develop a comprehensive plan for coal-fired electric generating units in the state that would address not only regional haze but also potential new ozone standards and mercury standards, as well as other requirements that, in the State's view, could apply to coal-fired electric generation units in the foreseeable future. The State desired to address these issues in a coordinated way in order to achieve the most cost-effective strategy that accounted for not only current, but other imminent regulatory requirements. This approach appears to be unique and, as noted below, will yield significant emissions reductions not only of pollutants that affect visibility in Class I areas, but also significant reductions in pollutants that contribute to ozone formation, nitrogen deposition, and mercury emissions and deposition. The State spent considerable time and conducted sequential and extended hearings to develop a plan which seeks to balance a number of variables beyond those that would be involved in a simpler and narrower regional haze determination.

Colorado's BART requirements for the Craig units reflect a balance struck by Tri-State Generation & Transmission Association, Inc. and several environmental groups before the Colorado Air Quality Control Commission during an extensive and formal proceeding; at the conclusion of the proceeding, the Commission adopted the agreement reached by Tri-State and those environmental groups as part of Colorado's regional haze plan. As a result, the plan requires installation of SCR at one of the two Craig BART-eligible units even though the Commission previously had concluded that installation of SCR was not warranted at either unit. In addition, we note that Colorado has imposed SCR as BART on two other EGUs in western

Colorado – Hayden Units 1 and 2 - and at the Pawnee plant in eastern Colorado. Moreover, Colorado has exceeded the minimum requirements for BART and reasonable progress for sources included in the PSCO BART Alternative (as described in our notice of proposed rulemaking, 77 FR 18073-18075), and has imposed substantial and meaningful controls, that go beyond what EPA’s regulations otherwise might have required, to address reasonable progress sources for the initial planning period.

Under the unique circumstances discussed above, EPA concludes that Colorado’s plan achieves a reasonable result overall. Based on this, we are approving the entirety of the Colorado regional haze SIP, even though the State’s BART analysis for Craig 1 only analyzed visibility impacts at the most impacted Class I area and appears to overestimate the costs of SCR controls. We expect Colorado to revisit the appropriateness of SCR controls on Craig Unit 1 in the next reasonable progress planning period.

Finally, we note that the State’s plan will result in NO_x emission reductions of 34,774 tons per year, SO₂ emission reductions of 35,776 tons per year, and PM reductions of 532 tons per year. As many of the NO_x emission reductions will occur along Colorado’s Front Range, the State’s plan should help reduce ozone levels in Colorado’s ozone non-attainment area and nitrogen deposition in Rocky Mountain National Park. In addition, portions of Colorado’s plan includes retirement and fuel-switching of existing coal-fired units, resulting in significant reductions of emissions of mercury into the atmosphere at levels that exceed what a straightforward application of emission reduction technology to satisfy BART and reasonable progress would have conferred on sources throughout the state.

B. NO_x BART Determination for Martin Drake Units 5, 6, and 7

Comment: The NO_x BART determination for Martin Drake underestimates the control efficiency of SCR. A conservative, but more appropriate control efficiency would be an annual average of 0.05 lb/MMBtu. This would result in additional reductions of 41, 69, and 105 tons of NO_x per year at Units 5, 6, and 7, respectively. This would also result in larger modeled visibility benefits.

Response: We agree that at some facilities, SCR has achieved annual NO_x emission rates as low as 0.05 lb/MMBtu; however, the annual emission rate of 0.07 lb/MMBtu assumed by Colorado in estimating the costs and benefits of SCR is within the range of actual emission rates demonstrated at similar facilities in EPA's CAMD emission database. Given this, we find that it was not unreasonable for Colorado to use 0.07 lb/MMBtu to model the predicted visibility improvement from SCR. Moreover, while we do agree that assuming a control efficiency of 0.05 lb/MMBtu would have resulted in greater modeled visibility benefits, we do not agree that the difference in visibility benefits would have led Colorado to a different conclusion given the magnitude of the benefits associated with SCR.

Comment: The costs of SCR were overestimated in the Martin Drake analysis in the following ways: (1) the SCR costs were estimated using the Integrated Emissions Control Cost (IECCOST) model, not the CCM as required by the BART Guidelines; (2) the calculated costs included items that are expressly disallowed or typically excluded when following the CCM methodology, including royalties, initial catalyst and chemicals, and escalation. These costs add millions of dollars to the total amount attributed to SCR; (3) the \$/kW costs were extremely high. While SCR retrofits typically range from \$83 - \$300/kW, including the most complex and space constrained projects, the costs for the Martin Drake units were \$558/kW, \$448/kW, and \$325/kW, for Units 5, 6, and 7, respectively; and (4) the analysis did not consider

the cost savings when controls like SCR are applied to multiple units at the same facility. This discount is on the order of 4-10%.

Response: We agree with several points in this comment. In fact, we raised many of the same issues related to cost analysis in our October 26, 2010, comment letter to the State. However, we note that Colorado eliminated SCR from consideration for the Martin Drake BART units primarily on the basis of the level of visibility improvement. The visibility improvement associated with SCR at Units 5, 6, and 7, is 0.12, 0.27, and 0.37 deciviews, respectively. In addition, as the State noted, the incremental visibility improvement from SCR versus ultra-low NO_x burners and overfire air (the control technology upon which the State's NO_x BART limits are based) is even lower – 0.04, 0.07, and 0.11 deciview, respectively, at Units 5, 6, and 7. The State concluded that lower costs would not change its BART determination. Based on these visibility improvement values and the expectation that cost effectiveness values for SCR calculated in accordance with the CCM would still be relatively high compared to the selected control option, we find that the State's NO_x BART determination for Martin Drake Units 5, 6, and 7 was reasonable.

Comment: A cost analysis consistent with the CCM would indicate that SCR is cost effective for the Martin Drake units. A revised costs analysis would show that the revised cost effectiveness for SCR is under the State's \$5000/ton threshold.

Response: The commenter did not provide sufficient data or analysis to support this assertion regarding a revised cost analysis. Regardless, for the reasons stated above, we conclude that the State's BART determination was reasonable. Even if a control technology is arguably cost-effective on a dollar per ton basis, a State may conclude that the control technology is not warranted based on a consideration of all BART factors.

Comment: EPA failed to consider the cumulative visibility benefits on all of the impacted Class I areas. Additionally, the predicted improvement for SCR at the most affected Class I area, at least 0.12 deciview, 0.27 deciview, and 0.37 deciview, for Units 5, 6, and 7, respectively, are not insignificant.

Response: While we agree that Colorado should have considered impacts to the various impacted Class I areas, we have no reason to believe that the cumulative visibility benefits would warrant a change in our approval of the State's NO_x BART determination for Martin Drake Units 5, 6, and 7. Regarding the predicted improvement at the most affected Class I area, while we agree that the levels are not insignificant, they are not significant enough for us to conclude that the State's BART determination was unreasonable, particularly when the incremental visibility improvement and expected costs of SCR are considered.

Comment: Cost-effective visibility benefits were rejected as a result of Colorado's criteria that holds post-combustion controls and SCR in particular to a higher standard of visibility benefits. As EPA itself previously pointed out in its October 26, 2010, letter: "...the criteria appear to discriminate against SCR as a potential control option. Under the criteria, if the cost of SCR is under \$5,000/ton and the modeled visibility benefit is 0.20 delta-deciview or greater but less than 0.50 delta-deciview, the State would reject SCR. Using the State's criteria, the State would find SNCR reasonable with the same \$/ton and delta-deciview values. We are not aware of a valid basis for applying different criteria to the two control options."

This example proves EPA's point. By this logic, if the evaluated technology in this instance were SNCR instead of SCR, it would be BART for at least Units 6 and 7, and possibly Unit 5. We concur with EPA's previous critique: this distinction has no basis and is untenable.

Response: While we do not necessarily agree with the State's criteria for post-combustion controls, we find the State's NO_x BART determination for Martin Drake Units 5, 6, and 7 to be reasonable within the context of the five factors for the reasons stated above.

C. BART Determination for Colorado Energy Nations (CENC) Unit 4 and Unit 5

Comment: In determining BART for Units 4 and 5, the State failed to identify and analyze alternative fueling scenarios that would lead to greater reductions in NO_x, sulfur dioxide (SO₂), and particulate matter. The proposed rule notes, and the underlying record clearly explains, that Units 4 and 5 are capable of burning (and do in fact burn) fuels other than coal. In particular, the proposed rule states that Unit 4 can and does burn natural gas or fuel oil and that Unit 5 can and does burn fuel oil. Both boilers may fire ethanol or sludge from the Coors Brewery.

Despite this, the State did not assess whether alternative fueling scenarios, such as a full or partial shift from coal to natural gas or fuel oil at Units 4 and 5 would represent BART. This is a concern because according to the CAA Title V Operating Permit for the facility, both Units 4 and 5 could meet stronger SO₂ and NO_x emission rates than have been proposed by the State as BART. The operating permit shows that the permitted emission rates for Units 4 and 5, when firing natural gas and/or fuel oil, are already lower than the proposed BART emission rates.⁸ Given that permitted emission rates are higher than actual emissions, this means that the facility is most likely capable of achieving far greater emission reductions under an alternative fueling scenario. Indeed, for Unit 4, whether firing natural gas or fuel oil, both permitted SO₂ and NO_x emission rates are lower than the proposed BART limits. For Unit 5, when firing fuel oil, the permitted SO₂ emission rate is lower than proposed BART. Furthermore, although the permitted NO_x emission rate for Unit 5 when firing fuel oil is higher than the proposed BART, it is based

⁸ See Colorado Department of Public Health and Environment, Operating Permit, Trigen-Colorado Energy Corporation Golden Facility (Feb. 1, 2003). Attached as Exhibit 1 to the comment.

on a 3-hour average (as opposed to a 30-day average) and even then, actual emissions are likely to be lower than the proposed BART

Here, alternative fueling scenarios, such as a full or partial shift away from coal to fuels that are already being burned in Units 4 and 5 (including natural gas and fuel oil) both seem to represent the “best system of continuous emission control technology” and seem entirely reasonable when considering the five factors required to be assessed by states when determining BART. The State failed to analyze alternative fueling in its SIP. Alternative fueling is an available technology that should have been analyzed by the State given that the visibility benefits to Class I areas could be tremendous. Although the State purported to identify “all available technologies” in its BART analysis, clearly it did not identify all available technologies.

The failure to analyze alternative fueling scenarios is especially confusing because the State did, apparently, identify in its TSD for the CENC facility a fuel switch to natural gas as an available technology and in analyzing “SO₂ Emissions Management” as potential BART, noted that an option to reduce emissions could involve a “dispatch [of] natural gas-fired capacity.” There is, however, no explanation in the TSD as to why “fuel switching,” or otherwise increased reliance on natural gas, would not constitute BART or would be contrary to the five factors required to be considered in establishing BART under the CAA.

The failure to analyze alternative fueling scenarios is further confusing because the EPA’s BART guidelines indicate that alternative fueling scenarios should be analyzed by states when determining BART. The guidelines specifically state that “potentially applicable retrofit control alternatives” can include the “use of inherently lower-emitting processes/practices” or “combinations of inherently lower-emitting processes and add-on controls.” Appendix Y at Section IV.D.3. Above all, states should “identify potentially applicable retrofit technologies

that represent the full range of demonstrated alternatives.” *Id.* The guidelines clearly indicate that inherently “lower-emitting processes,” such as alternative fueling, are squarely within the realm of what may be considered BART.

Given the State’s failure to take into consideration an available technology, the EPA must disapprove the BART determinations for CENC Units 4 and 5 and in accordance with the CAA promulgate a FIP that establishes BART limits based on a full consideration of alternative fueling scenarios.

Response: Although the State did not present the information in the SIP and was not required to analyze such scenarios, the State in fact analyzed alternative fueling scenarios for Unit 4 and Unit 5.⁹ The State examined fuel switching to a number of different fuels. The State determined that Units 4 and 5 are not capable of burning wood or other biomass fuels and the use of sludge as the primary fuel is not technically feasible due to handling and storage issues. The State determined residual oil, distillate oil, ethanol, and natural gas were technically feasible options.

The State determined residual oil would not result in pollutant reductions, and that distillate oil, ethanol, and biodiesel are high cost fuels for boilers of this size, with prices about two to three times the cost of natural gas, and six to seven times the cost of coal (at the time of analysis - December 2009) and highly volatile. Thus, the State eliminated these fuels from further consideration.

Furthermore, the State determined the cost effectiveness of fuel-switching to natural gas for SO₂ and NO_x control for Units 4 and 5. The State determined the costs for fuel switching to natural gas for SO₂ would be \$29,985/ton removed for Unit 4 and \$30,945/ton removed for Unit 5. The State determined the costs for fuel switching to natural gas for NO_x would be \$64,102/ton

⁹ The State sent an e-mail to EPA Region 8 on July 16, 2012 containing its cost estimates for fuel switching. The cost analysis can be found in the docket.

removed for Unit 4 and \$82,834/ton removed for Unit 5. Because of the high cost effectiveness values, the State did not perform any visibility modeling for fuel switching to natural gas and the State eliminated it from further consideration for BART. We have reviewed the State's cost calculations and find them reasonable.

Based on the above statement from our BART guidelines, and based on the State's analysis, we agree with the State's conclusion that fuel switching to natural gas is not BART at CENC Units 4 and 5.

D. NO_x BART Determination for Cemex Lyons Kiln

Comment: Colorado did not appropriately analyze whether SCR was reasonable as BART for the kiln at the Cemex Lyons cement plant. In particular, the State rejected SCR as not an available technology. EPA itself did not agree with this finding. Despite this, EPA allowed the State to reject SCR due to perceived uncertainty over its cost effectiveness. However, because the State rejected SCR as an available technology, no analysis of the costs of SCR was actually undertaken and therefore, EPA's claims are baseless.

SCR has been an available emission control technology for NO_x emissions for many years. Although its use on cement kilns has come about recently, several sources indicate that the technology is available and cost-effective, contrary to claims by the State. A report commissioned by Rocky Mountain Clean Air Action, which later merged with WildEarth Guardians, found that SCR "is an effective and proven technology to reduce nitrogen oxide emissions from cement kilns."¹⁰ The report concluded that: "The installation of SCR on the [Cemex] Lyons Cement Plant could be expected to achieve substantial reductions (85-95%) in emissions of NO_x." The report also found that the cost effectiveness of utilizing SCR ranges

¹⁰ See Armendariz, A, The Costs and Benefits of Selective Catalytic Reduction on Cement Kilns for Multi-Pollutant Control and the Applicability to the CEMEX Lyons Cement Plant (February 15, 2008) at 19. This report is attached as Exhibit 2 to this comment.

between \$1,500 and \$3,800 per ton of NO_x reduced, which is “easily within regulatory cost thresholds for many NO_x control programs.” Follow up correspondence from the author of the report, Dr. Armendariz to the State further confirmed that SCR was available and cost-effective.¹¹

EPA cannot come to conclusions on the cost effectiveness of SCR without analytical support, and there is no support for approving the State BART determination for the Cemex Lyons cement kiln. We request the EPA promulgate a FIP that objectively and thoroughly analyzes SCR as an available technology for purposes of establishing BART limits for the Cemex Lyons cement kiln.

Response: We disagree with this comment and stand by the rationale presented in our proposal (77 FR 18062). As we said there, we accept the State’s decision, not to analyze SCR further for the purposes of regional haze. EPA has acknowledged, in the context of establishing the New Source Performance Standards (NSPS) for Portland Cement Plants, substantial uncertainty regarding the cost effectiveness associated with the use of SCR at such plants (75 FR 54995). In particular, while EPA noted that SCR had been used at three cement kilns in Europe, and had been agreed to by one domestic cement kiln as part of a settlement, EPA also noted the potential for dust buildup on the catalyst, “which [could] be influenced by site specific raw material characteristics present in the facility’s proprietary quarry, such as trace contaminants that may produce a stickier particulate than is experienced at sites where the technology has been installed.” *Id.* at 54994, 54995. EPA went on to state in the NSPS rulemaking that “[t]his buildup could reduce the effectiveness of the SCR technology, and make cleaning of the catalyst difficult resulting in kiln downtime and significant costs.” *Id.* Because of the uncertainty, EPA

¹¹ See Letter from Armendariz, A. to Dann, C. in re: SCR and Cement Kilns (July 22, 2008). This letter is attached as Exhibit 3 to this comment.

was unable to estimate these costs. *Id.* For the reasons stated in our NSPS rulemaking and in the State's regional haze SIP, there is also substantial uncertainty regarding the costs and control effectiveness of SCR at Cemex. We are not convinced that cost and control effectiveness information from the European plants or from SCR applications at other types of sources is sufficiently reliable to guide a BART determination for Cemex.¹² Under the circumstances, we find that Colorado reasonably eliminated SCR as a potential BART control technology. As we stated in our proposal, we expect the State to reevaluate SCR technology in subsequent reasonable progress planning periods as more information regarding the use of SCR at cement kilns becomes available.

E. NO_x BART Determination for Comanche Unit 1 and Unit 2

Comment: Comanche Units 1 and 2 are currently meeting lower NO_x emission rates than the emission limits the State proposed for BART. With regard to the proposed BART limits, the State has proposed, and EPA has proposed to approve, a 30-day emission rate for Units 1 and 2 of 0.20 lb/MMBtu and a combined annual average emission rate of 0.15 lb/MMBtu for Units 1 and 2. According to the State, these limits will be met with no additional controls on Unit 1 or Unit 2.

The State's own BART analysis notes that currently Unit 1 is emitting at an average annual rate of 0.124 lb/MMBtu and Unit 2 is emitting at an average annual rate of 0.165 lb/MMBtu. This means that both on a 30-day rolling average basis and on an annual average basis, both units are capable of emitting, and indeed do emit, at rates below the proposed BART limits of 0.20 lb/MMBtu on a 30-day rolling average and 0.15 lb/MMBtu on an annual basis. In essence, Colorado's BART proposal actually allows Comanche Units 1 and 2 to emit

¹² The State indicated that CEMEX consulted four potential SCR vendors but was unable to obtain meaningful quotes from any of them.

more pollution than what they currently emit.

Under the State's proposed BART, emissions will be allowed to increase on an annual basis. Using annual heat input totals from the baseline year of 2009 obtained from the EPA's Air Markets Program Data website (24,247,113.27 MMBtu for unit 1 and 27,423,612.26 MMBtu for unit 2) and using the proposed annual combined average BART limits, it appears that under the annual BART limits, NO_x emissions will be allowed to increase by at least 14 tons per year (tpy).

Concerning the 30-day rolling average limits, there will definitely be allowed emission increases. During the baseline year of 2009, both Comanche Unit 1 and Unit 2 emitted far lower than the proposed BART limit of 0.20 lb/MMBtu. During the baseline year of 2009, 30-day rolling average NO_x emissions were consistently far below 0.20 lb/MMBtu for the year. Even the peak 30-day rolling averages of 0.142 and 0.179 lb/MMBtu for Units 1 and 2, respectively, are below the proposed limit. Based on this, the proposed BART would actually allow Unit 1 to emit at least 40% more NO_x than the baseline 30-day rolling average peak and Unit 2 to emit 12% more NO_x. However, this is just in the context of the baseline peak 30-day rolling average. In all reality, actual 30-day rolling average emission will remain even further below the proposed BART limit of 0.20 lb/MMBtu.

Clearly, Comanche Units 1 and 2 could easily meet lower emission limits as BART. We do not suggest that the State was required to set the emission limits exactly at the levels emitted, but clearly when the data demonstrates that Unit 1 could meet a 30-day rolling average NO_x emission limit of 0.15 lb/MMBtu and Unit 2 could meet a limit of 0.18 lb/MMBtu without any trouble, the BART limits should reflect what is achievable.

Although the State and the EPA may claim the proposed limits are necessary to

provide a margin or cushion of compliance, nothing in the CAA or the EPA's regulations suggests that it is appropriate to build in such margins or cushions into BART limits, especially given that BART must represent that "best system of continuous emission reduction." If Comanche Units 1 and 2 can do better, than clearly, the proposed BART limits are not the best. Nothing in the CAA or the EPA's regulations implementing the regional haze program suggest or remotely imply that a state could allow emission increases as BART.

Accordingly, EPA must disapprove of Colorado's NO_x BART determinations for Comanche Unit 1 and Unit 2 and adopt a FIP that establishes BART limits that are consistent with the CAA and that represent actual emission reductions.

Response: In our October 26, 2010, comment letter to Colorado, we asked Colorado to evaluate tightening Comanche's NO_x limits as potential BART. As discussed in Colorado's BART analysis for the Comanche units, Colorado did in fact evaluate emission limit tightening in response to our concerns. Colorado subsequently concluded that a 0.20 lb/MMBtu 30-day rolling average emission limit was necessary to account for uncertainty regarding load fluctuations, cold-weather operating, start-up, and cycling for renewable energy. Colorado noted that greater future reliance on renewable energy will lead to increased cycling of the Comanche units and more frequent start-ups. This in turn may lead to increased emissions over shorter averaging periods compared to past actual emissions. Colorado also noted the limited amount of actual emissions data for the two units since controls were installed for SO₂, and the same is true for NO_x. Thus, while Colorado established an annual NO_x BART limit of 0.15 lb/MMBtu that is lower than the average actual emissions of 0.16 lb/MMBtu for Units 1 and 2 between January and October 2010, Colorado allowed greater leeway in the 30-day rolling average limit than would result from the strict application of a 15% buffer to 0.16 lb/MMBtu (0.20 lb/MMBtu

versus 0.184 lb/MMBtu). Given some of the uncertainties regarding future operations and emissions, we have determined that the State acted reasonably in setting the emission limits for Comanche Units 1 and 2. We also note that commenter's own analysis suggests that the difference in annual emissions between maximum emissions under the BART limit using 2009 heat inputs and 2009 actuals would only be 14 tons per year. This is not significant when compared to Comanche's annual NO_x emissions of approximately 3,860 tons; it does not warrant disapproval and a subsequent FIP.

In addition, Comanche's actual emissions following the installation of low NO_x burners and over-fire air occurred under permit limits that are identical to those the State selected as BART. The commenter has provided no evidence that the State's adoption of the same limits as BART limits will cause an increase in actual emissions.

Comment: The State failed to assess appropriately the cost of SCR. In particular, the State assumed that SCR would achieve an emission rate of 0.07 lb/MMBtu. However, as EPA itself noted in its October 26, 2010, comment letter to the State, SCR does achieve emission rates as low as 0.04 lb/MMBtu on an annual basis, and a 0.05 lb/MMBtu emission rate is a more appropriate benchmark from which to assess the cost effectiveness of SCR.

In this case, the State did not assess the cost effectiveness of SCR based on a rate of 0.05 lb/MMBtu. Thus, it did not reasonably take into account the cost of compliance with SCR in accordance with the CAA. Without an adequate case-specific cost analysis, there is simply no support for concluding SCR, particularly for Unit 2, is unreasonable.

Response: As stated above, we agree that SCR has in some cases achieved annual NO_x emission rates as low as 0.05 lb/MMBtu, the emission rate that commenters suggest would have been a more appropriate benchmark in assessing the costs of SCR at Comanche; however, the 0.07

lb/MMBtu annual emission rate assumed by Colorado in estimating the costs and visibility benefits associated with SCR is within the range of actual emission rates demonstrated at similar facilities in EPA's CAMD emission database. Moreover, as with Martin Drake, we do not believe that if Colorado had used a more stringent emission rate that the impact on the BART analysis would have led Colorado to a different conclusion given the magnitude of the benefits associated with SCR. Given this, we conclude that the State's use of 0.07 lb/MMBtu to evaluate the cost effectiveness of SCR at Comanche was not unreasonable.

Comment: The State appears to have overestimated the capital cost of SCR. Both the EPA and the NPS previously commented to the State that the State should have used the EPA's CCM and noted that the CUECost model relied upon by the State is not appropriate. Nowhere in the record does the State explain why CUECost was reasonable, particularly in light of the concerns expressed by the EPA and the NPS. It appears that the reliance on CUECost led to artificially inflated capital costs, which in turn overestimated the true cost of SCR.

Response: We agree that there were flaws in Colorado's approach to estimating the costs of SCR for the Comanche BART units. However, we find that the State's NO_x BART determination to be reasonable within the context of the five factors, particularly based on the relatively modest visibility improvement associated with SCR - 0.14 deciviews at Unit 1, and 0.17 deciviews at Unit 2 - and the expectation that cost effectiveness values for SCR calculated in accordance with the CCM would still be relatively high compared to the selected control option.

Comment: Although the State and EPA may claim that, even if the costs were accurately assessed, the visibility benefits of SCR would not be significant, even for Unit 2, there is no support for this assertion. In particular, it appears as if the State's assessment of visibility

improvements is based on an assumption that the proposed BART limits (i.e., the “do nothing” BART) would actually improve visibility. Given that the proposed BART limits would allow increased emissions, it would not actually improve visibility. When compared to the real impacts of the State’s proposed BART for Comanche unit 1, SCR would appear to provide significant visibility improvements because, as opposed to the proposed BART, SCR would actually achieve improvements. For Unit 2, this is especially significant because SCR was the only available technology analyzed for BART. Thus, by all indications, SCR is the only means of actually achieving visibility improvements at Comanche Unit 2.

Response: We disagree with this comment. As shown in Colorado’s visibility impact analysis for the Comanche BART units, Colorado assessed the benefit of control options relative to both the subject-to-BART baseline and to the installation of new LNB in 2007 and 2008. In addition, the subject-to-BART modeling emission rates were based on the maximum 24-hr rate consistent with the BART guidelines. Colorado’s analysis shows visibility benefits for all of the control options considered, not just SCR. Moreover, relative to the subject-to-BART baseline, Colorado’s BART selection (combustion controls), does in fact show visibility improvement (0.16 deciview and 0.31 deciview for Units 1 and 2, respectively). Therefore, EPA finds that no changes to the BART determinations or to the SIP are needed in response to this comment.

Comment: It is unclear why the State rejected SNCR for Comanche Unit 1, particularly given that the proposed BART limit for Unit 1 is less stringent than Unit 1’s current actual emissions. Under an SNCR scenario, Unit 1 would meet a 30-day rolling average emission rate of 0.10 lb/MMBtu according to the EPA. According to the State, the cost, coupled with the State’s perceived “low visibility improvement” warranted a determination that SNCR was not reasonable. However, according to the State’s analysis, SNCR is cost effective at Unit 1, costing

\$3,644 per ton of NO_x reduced, which is squarely within the range of what the State considers to be cost-effective.

Response: We find that the State's rejection of SNCR was reasonable based on its weighing of the BART factors. The State reasonably concluded that the cost of SNCR was not warranted given the relatively modest visibility improvement that would result - 0.11 deciviews. Even if a control technology is arguably cost-effective on a dollar per ton basis, a State may conclude that the control technology is not warranted based on a reasonable consideration of all BART factors.

Comment: With regard to visibility benefits, the State's analysis also indicates that SNCR would achieve greater improvement than an emission rate of 0.20 lb/MMBtu on a 30-day rolling average. Although the State asserts that the improvement would amount to 0.11 deciviews, it is unclear why such improvements are not reasonable or are otherwise insignificant, particularly given that the purpose of BART is to reduce or eliminate visibility impairment, and indeed there is no explanation in the record supporting the State's assertion. It also appears as if the State's assessment of visibility improvements is based on an assumption that the proposed BART limits would actually improve visibility. Given that the proposed BART allows increased emissions, it would not improve visibility. When compared to the real impacts of the State's proposed BART for Comanche Unit 1, SNCR appears to provide significant visibility improvements because, as opposed to the proposed BART, SNCR would actually achieve improvements. This further underscores why the State's BART determination for Comanche Unit 1 is flawed and why EPA must promulgate a FIP that establishes appropriate NO_x BART limits.

Response: The commenter is correct that the State predicted that SNCR would result in additional improvement in visibility over the control technology the State selected as BART. However, this does not mean the CAA or our regulations required the State to select SNCR as

BART. For the reasons stated above, we find that it was reasonable for the State to reject SNCR based on consideration of all the BART factors. Regarding the commenter's suggestion that the State's selected limits will lead to an increase in emissions, as noted above, the commenter has presented no evidence that this will occur. Moreover, as indicated in a separate response to comments, above, Colorado assessed the benefit of control options relative to both the subject-to-BART baseline and to the installation of new LNB in 2007 and 2008. Relative to the subject-to-BART baseline, Colorado's BART determination does in fact result in visibility benefits. The installation of LNB resulted in a visibility improvement of 0.16 deciview and 0.31 deciview for Comanche Units 1 and 2, respectively.

F. NO_x Reasonable Progress Determination for Craig Unit 3

Comment: We received comments that the reasonable progress evaluation of Craig Unit 3 includes the same flaws as for Units 1 and 2 (see comments in section IV.A.1 – 4 above). One commenter indicated that the estimated cost effectiveness is no higher than \$3,190/ton, and likely lower, considering the conservative \$300/kW starting point for their analysis. Another commenter estimated the cost effectiveness of SCR at Unit 3 as \$2,385/ton.

Based on visibility modeling from the NPS, commenters pointed out that the visibility benefits of adding SCR to Unit 3 are similar to those at Units 1 and 2 – over 0.5 deciview at five Class I areas, and additional benefits at several more. The commenters asserted that, cumulatively, Unit 3 has an 8.39 deciview impact, with SCR providing a cumulative visibility improvement of 4.56 deciviews. Commenters went on to say that SCR at a limit of 0.05 lb/MMBtu should be required as reasonable progress for Craig Unit 3.

Response: We agree that the State likely overestimated the cost associated with SCR at Unit 3, but we are not prepared to disapprove the State's reasonable progress determination for Craig

Unit 3. Assuming the commenters' assessments of the cost effectiveness of SCR are reasonably accurate, the values are not so low that it is clear that the State would have been unreasonable to reject SCR, especially given the State's requirement that Craig Unit 3 install SNCR and the resulting visibility benefits. We expect the State to re-evaluate SCR for Unit 3 in the next planning period.

G. NO_x Reasonable Progress Determination for Nucla

Comment: The State's proposed SIP appears to allow increased emissions from the Nucla coal fired power plant under the reasonable progress aspect of the proposed SIP. In light of this, it is unclear how the proposed emission limits for NO_x and SO₂ actually meet the State's reasonable progress goals. Under the reasonable progress prong of the regional haze requirements of the CAA, the State determined that additional controls at the Nucla plant were reasonable to protect Class I areas. Accordingly, the State proposed to require the power plant to achieve a NO_x emission limit of 0.5 lb/MMBtu and an SO₂ limit of 0.4 lb/MMBtu, both over a 30-day rolling average period. However, according to data from EPA's Air Markets Program Database, Nucla has been meeting emission rates far below these proposed reasonable progress limits.

Indeed, data from the EPA demonstrates that between January 1, 2009, and December 31, 2011, Nucla has been meeting an average monthly NO_x emission rate of 0.367 lb/MMBtu and an average monthly SO₂ emission rate of 0.301 lb/MMBtu. These rates indicate that Nucla is able to meet more stringent emission rates at no additional cost. The monthly SO₂ and NO_x emission rates actually achieved by Nucla in the past 3 years clearly demonstrate that the power plant has consistently emitted at rates below the reasonable progress limits proposed by the State. Nucla is capable of achieving NO_x and SO₂ emission rates lower than 0.30 lb/MMBtu on a 30-day basis.

More importantly though, these rates indicate that the State's proposed reasonable progress limits actually allow more air pollution to be emitted from Nucla than is currently emitted. An increase in emissions would not appear to ensure reasonable progress in restoring visibility in Colorado's Class I areas. Thus, the State's proposed SIP is not approvable by EPA because it fails to ensure reasonable progress in accordance with 42 U.S.C. § 7491(g)(1) and 40 CFR 51.308(d)(1)(i). At the least, the proposed reasonable progress emission limits for Nucla demonstrate that the State failed to appropriately assess the costs of compliance in accordance with the CAA. Indeed, if the State had appropriately assessed the costs of compliance, it would have found that lower emission rates would be equally cost-effective and more protective of visibility. Such a flawed analysis of reasonable progress in relation to the Nucla plant cannot be approved by EPA.

The EPA must promulgate a FIP that establishes reasonable progress limits at the Nucla plant that actually achieve cost-effective emissions reductions. To this end, we request EPA adopt reasonable progress limits that limit NO_x emissions to no more than 0.25 lb/MMBtu and SO₂ emissions to no more than 0.28 lb/MMBtu. Such limits are achievable and appear to be very cost-effective given that they would cost nothing.

Response: We disagree with this comment. Colorado based the SO₂ emission limit of 0.4 lb/MMBtu on the existing limestone injection system for SO₂, and it based the NO_x limit of 0.5 lb/MMBtu on the inherent low-NO_x nature of the circulating fluidized bed boiler. A review of recent (2008-2010) monthly data in EPA's CAMD emissions database shows monthly NO_x emission rates as high as 0.45 lb/MMBtu and monthly SO₂ emission rates as high as 0.33 lb/MMBtu. These rates are commensurate with the reasonable progress emission limits

established by Colorado. Based on its reasonable progress analysis, Colorado concluded that no additional controls were reasonable. We concur with that conclusion.

H. Reasonable Progress for Rio Grande Cement Company (GCC)

Comment: The State should have analyzed visibility impacts due to GCC, as either a permit modification or as a reasonable progress source. To date, the State has not considered the impacts of the source under either program. Had the State compared GCC's emissions (Q) as a function of distance (d) to the threshold $Q/d > 20$ used to determine whether a source would be included in the reasonable progress analysis, GCC would have qualified for reasonable progress review. The State contends that GCC was not included in the reasonable progress review because the State used 2007 emissions to determine which sources were subject to reasonable progress review, and GCC did not begin normal operations until 2009. However, in its analysis of the proposed permit modification, the State asserts that GCC's actual emissions should be based upon the current permit limits, not zero emissions. In that case, GCC's permit emissions should have been used to trigger inclusion in the Colorado reasonable progress analysis.

It is essential that any regulatory program try to maintain a "level playing field." There are two other cement plants in Colorado, and additional NO_x controls are being required on both under Colorado's regional haze SIP.

GCC has installed SNCR but the current permit does not require these controls to be operated. We believe that, because the GCC permit allows emissions that exceed the State's threshold for determining which sources are subject to a reasonable progress analysis, GCC should have been included as a reasonable progress source. It is likely, based on the State's actions regarding the other two cement plants that the State would have required continuous

operation of SNCR. EPA should require GCC to reduce NO_x emissions by 45% on a continuous basis.

Response: The State based its evaluation of potential reasonable progress sources on stationary sources with actual emissions of 100 tpy or greater of PM, NO_x, and SO₂ based on Air Pollution Emissions Notice (APEN) reports from 2007. The APEN reports for 2007 are based on data reported to the State by April 30, 2007, which is based on the previous full year of production (2006). The State formalized its reasonable progress analysis process in 2009. At that time, the APEN report data the State had (that had undergone full quality assurance and quality control) were the 2007 APEN reports based on the source reported 2006 data.

In 2006, Rio Grande Cement reported zero emissions because it did not operate. In 2007, Rio Grande Cement did report APEN emissions (based on permitted limits) resulting in a Q/d>20, but those emissions were not actual emissions because the source did not actually begin producing cement until April 2008. Because the State based its reasonable progress evaluation on 2006 actual emissions, we find it reasonable that the State did not further evaluate GCC for purposes of reasonable progress. We expect the State to do so for the next reasonable progress planning period.

I. Legal Issues

1. Public Service Company of Colorado (PSCO) BART Alternative

Comment: Phase III of the SIP Rulemaking (at which the PSCO BART Alternative was adopted), to which Colorado Mining Association (CMA) was a party, was based upon numerous irregularities and violations of the Colorado Administrative Procedures Act, the Colorado Air Pollution Prevention and Control Act, and H. B. 10-1365. CMA filed a complaint challenging the Air Quality Control Commission's (AQCC) SIP Rulemaking on March 16, 2011, in Denver

District Court. The CMA case is pending review by the District Court. The issues before the court are numerous and establish the AQCC's Phase III rulemaking was improper and that the PSCO BART Alternative should be stricken from the Colorado regional haze SIP. If the Court determines that the Phase III rulemaking was improper, and therefore, portions of the proposed Colorado SIP were invalid under State law, those same portions of the proposed Colorado SIP would be unenforceable under federal law.

As a result of the AQCC's egregious failures in Phase III of the SIP Rulemaking, the PSCO BART Alternative should not be included in the Colorado regional haze SIP. Until the Court has completed its review, EPA should not act to include the PSCO BART Alternative in the State's regional haze SIP.

Response: Once a state has submitted a SIP revision to us, we must approve it if it meets the CAA's minimum requirements. One of the relevant requirements is that the State have adequate authority under State law to carry out the plan. See CAA section 110(a)(2)(E). Absent a stay or determination by a court that a plan is invalid, or some other clear indication that the State lacks authority to implement the plan, we have no basis to disapprove it under 110(a)(2)(E). Here, there is no indication that Colorado lacks authority to implement the PSCO BART Alternative. Indeed, it is our understanding that CMA's lawsuit has been dismissed by the Denver District Court as moot. We have included a copy of the court's June 6, 2012 order in the docket for this action. If a court subsequently invalidates the PSCO BART Alternative, we will need to evaluate the Colorado SIP at that time, but the possibility of future invalidation does not provide a basis for us to disapprove the PSCO BART Alternative.

2. Timing of Implementation

Comment: Colorado’s proposed SIP appears to contain a blanket schedule of BART compliance that states, “sources must comply as expeditiously as practicable, but no later than 5 years from EPA approval of the SIP.” This blanket schedule of compliance, which applies to all subject-to-BART sources under the proposed Colorado SIP, is contrary to the CAA. It is true that the CAA requires that subject-to-BART sources “procure, install, and operate, as expeditiously as practicable” any additional controls that may represent BART. However, simply stating verbatim in the SIP that “sources must comply as expeditiously as practicable” fails to give force and effect to this statutory provision. In this case, it is unclear what “as expeditiously as practicable” means, particularly in the context of individual subject-to-BART sources. The lack of any specificity renders this provision unenforceable, which further undermines the adequacy of the SIP under CAA section 110 and frustrates the statutory mandate set forth under the CAA.

Additionally, the CAA is clear that in mandating “expeditious” compliance, SIPs must ensure that subject-to-BART sources comply as soon as possible. In this case, Colorado’s SIP simply fails to ensure compliance with BART as soon as possible. It lacks any concrete dates by which subject-to-BART sources must comply, other than to state that sources must comply within the statutory maximum compliance date of 5 years. However, the CAA is clear that if a source can comply with BART before 5 years, it must comply by that earlier date. See 42 U.S.C. 7491(g)(4). Simply deferring to the 5-year deadline undermines the Congressional intent behind the “as expeditiously as practicable” provision.

It is notable that in other situations, the EPA has proposed to require concrete compliance dates to satisfy the CAA’s “as expeditiously as practicable” provisions under the regional haze program. For example, in proposing a FIP for BART for the San Juan Generating Station in

New Mexico, the EPA proposed a 3-year compliance date, finding it to be “as expeditiously as practicable” (76 FR 504). Although EPA ultimately concluded that a 5-year schedule of compliance was appropriate, the Agency’s proposed action clearly signaled that a concrete date is needed to satisfy the CAA.

The EPA must therefore disapprove of Colorado’s blanket schedule of BART compliance. In its place, the Agency must promulgate a FIP that sets forth concrete dates by which all subject-to-BART sources must “procure, install, and operate” BART that represent the most expeditious dates practicable.

Response: We have reviewed the compliance dates for meeting BART limits that are contained in the SIP. These dates are reasonable given the magnitude of the retrofits being undertaken. We note that the State’s Regulation Number 3 - *Stationary Source Permitting And Air Pollutant Emission Notice Requirements* that we are approving as part of this action provides for compliance as expeditiously as practicable, but in no event later than 5 years from EPA final approval of the SIP.

3. Compliance with Section 110(l)

Comment: The EPA is duty-bound to ensure the proposed SIP does not interfere with attainment and maintenance of the National Ambient Air Quality Standards (NAAQS), in accordance with section 110(l) of the CAA. Thus, the EPA must ensure that the proposed SIP adequately limits air pollution in order to safeguard public health.

In this case, we are concerned that in proposing to approve Colorado’s regional haze plan that the EPA has not demonstrated that the proposal adequately safeguards the 2008 8-hour ozone NAAQS, the newly promulgated 1-hour nitrogen dioxide NAAQS, the newly promulgated

1-hour SO₂ NAAQS, and the 2006 fine particulate matter (PM_{2.5}) NAAQS. Thus, EPA has not shown the extent to which public health is likely to be protected under the proposed SIP.

We are particularly concerned that the EPA overlooked its 110(l) obligations under the CAA given that, although the proposed rule may lead to emission reductions, no analysis or assessment has been prepared to demonstrate that even after these emission reductions, the recently promulgated NAAQS will be met. In this case, we are particularly concerned that the recently promulgated 1-hour NO₂ and SO₂ NAAQS could be jeopardized. Indeed, many, if not most, of the proposed emission rates are based on 30-day rolling averages. There is no indication that meeting emission rates on a 30-day rolling average will ensure that 1-hour NAAQS will be sufficiently protected. Indeed, a source could comply with a 30-day rolling average limit, yet still emit enough pollution on an hourly basis to cause or contribute to violations of the NAAQS, thereby interfering with attainment or maintenance.

We are further concerned over the fact that several BART limits allow for increased emissions. For example, the proposed NO_x BART determinations for Comanche Units 1 and 2 allow for greater emissions than are currently released by the units. This raises concerns over the impacts to the NAAQS. These impacts must be addressed by EPA.

In this case, the EPA must either disapprove of the Colorado SIP over the State's failure to perform a 110(l) analysis or prepare its own 110(l) analysis to demonstrate that the SIP will effectively protect public health and not interfere with attainment or maintenance of the NAAQS.

Response: CAA section 110(l) provides that EPA “shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress..., or any other applicable requirement of” the CAA. It is not clear that the regional haze SIP submitted by Colorado is a “revision of a plan” within the meaning of CAA

section 110(l) as it is the first implementation plan due under the regional haze program. See, e.g., § 51.308(b). However, even if such an analysis were required, the commenter has not provided any evidence that the Colorado regional haze SIP will interfere with any applicable requirement concerning attainment and reasonable progress or any other applicable requirement of the CAA, or that further analysis under 110(l) is necessary.

Although the Colorado regional haze SIP will lead to emission reductions, the commenter asserts that that even so EPA must determine that the SIP revision will ensure the NAAQS are met. We disagree with this interpretation of CAA section 110(l). The Act and EPA's regulations require the regional haze SIP to address visibility impairment in mandatory Class I areas—attainment of the NAAQS is provided for through a separate SIP process. It is EPA's consistent interpretation of section 110(l) that a SIP revision does not interfere with attainment and maintenance of the NAAQS if the revision at least preserves the status quo air quality by not relaxing or removing any existing emissions limitation or other SIP requirement. EPA does not interpret section 110(l) to require a full attainment or maintenance demonstration for each NAAQS for every SIP revision. See, e.g., *Kentucky Resources Council, Inc., v. EPA*, 467 F.3d 986 (6th Cir. 2006); see also, 61 FR 16050, 16051 (April 11, 1996) (actions on which the *Kentucky Resources Council* case were based).

Thus, in this action, we need not determine whether a 30-day limit is adequate to protect a shorter-term NAAQS because the regional haze SIP is not required to ensure attainment of the NAAQS. The fact that the regional haze SIP specifies 30-day limits will not preclude Colorado from adopting limits with a shorter averaging time, if at some future date such limits are found to be necessary and required by the CAA to protect the NAAQS.

The commenter also alleges that “several BART limits allow for increased emissions” over current actual source emissions and cites as an example the NO_x BART limits for Comanche Units 1 and 2. The commenter claims this raises concerns over impacts to the NAAQS. However, the Colorado regional haze SIP imposes new emissions limits on a number of existing sources, and it does not relax any existing emissions limits or other SIP requirements. In fact, the regional haze SIP makes violations of the NAAQS less likely because without the BART limits, actual emissions could increase even more. And, the regional haze SIP does not prevent the State from adopting lower limits in the future as necessary to protect the NAAQS. Thus, the regional haze SIP revision and its BART limits will not interfere with “any applicable requirement concerning attainment and reasonable further progress..., or any other applicable requirement of” the CAA.

J. Comments Generally in Favor of our Proposal

Comment: We received comment letters fully in support of our rulemaking from Xcel Energy, Tri-State Generation, and a letter on behalf of Colorado Environmental Coalition, Environment Colorado, Environmental Defense Fund, and Western Resource Advocates. We received 84 comments from members of National Parks Conservation Association generally in support of our action. These comments from National Parks Conservation Association members also urged EPA to finalize stricter NO_x controls on Tri-State Craig Unit 1, which we have addressed above. We also received comments from National Parks Conservation Association, the NPS, and WildEarth Guardians that supported the majority of our action, but pointed out some concerns, to which we have responded above.

Response: We acknowledge the support of these commenters for part or all of our proposed action.

V. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 USC 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this action merely approves state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this action:

- is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 USC 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 USC 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and

Advancement Act of 1995 (15 USC 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and

- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, this rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because the SIP is not approved to apply in Indian country located in the state, and EPA notes that it will not impose substantial direct costs on tribal governments or preempt tribal law.

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this action and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the Federal Register. A major rule cannot take effect until 60 days after it is published in the Federal Register. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by [FEDERAL REGISTER OFFICE: insert date 60 days from date of publication of this document in the Federal Register]. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for the purposes of judicial review nor does it extend the

time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (See CAA section 307(b)(2).)

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Nitrogen dioxide, Ozone, Particulate matter, Sulfur oxides.

Dated: September 10, 2012

James B. Martin
Regional Administrator
Region 8

For the reasons discussed in the preamble, 40 CFR chapter I is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for Part 52 continues to read as follows:

Authority: 42 USC 7401 et seq.

Subpart G—Colorado

2. Section 52.320 is amended by adding paragraph (c)(108)(i)(C) and adding paragraph (c)(124) to read as follows:

§ 52.320 Identification of plan.

* * * * *

(c) * * *

(108) * * *

(i) * * *

(C) Colorado Air Quality Control Commission, Regulation Number 3, 5 CCR 1001-5, Stationary Source Permitting and Air Pollutant Emission Notice Requirements, Part D, Concerning Major Stationary Source New Source Review and Prevention of Significant Deterioration, Section XIV.F, Long Term Strategy, subsection XIV.F.1. introductory text and XIV.F.1.c; adopted January 7, 2011; effective February 14, 2011.

* * * * *

(124) On May 25, 2011 the State of Colorado submitted revisions to its State Implementation Plan to address the requirements of EPA's regional haze rule.

(i) Incorporation by reference.

(A) Colorado Air Quality Control Commission, Regulation Number 3, 5 CCR 1001-5, Stationary Source Permitting and Air Pollutant Emission Notice Requirements, Part F, Regional Haze Limits - Best Available Retrofit Technology (BART) and Reasonable Progress (RP),

Section VI, Regional Haze Determinations, and Section VII, Monitoring, Recordkeeping, and Reporting for Regional Haze Limits; adopted January 7, 2011; effective February 14, 2011.

(B) Colorado Air Quality Control Commission, Regulation Number 7, 5 CCR 1001-9, Control of Ozone via Ozone Precursors (Emissions of Volatile Organic Compounds and Nitrogen Oxides), Section XVII, (State Only, except Section XVII.E.3.a. which was submitted as part of the Regional Haze SIP) Statewide Controls for Oil and Gas Operations and Natural Gas-Fired Reciprocating Internal Combustion Engines, subsection E.3.a, (Regional Haze SIP) Rich Burn Reciprocating Internal Combustion Engines; adopted January 7, 2011; effective February 14, 2011.

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